#8

RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: 10/534,279
Source: PCT
Date Processed by STIC: 05/23/2006

ENTERED

PCT

RAW SEQUENCE LISTING DATE: 05/23/2006
PATENT APPLICATION: **US/10/534,279** TIME: 14:03:58

Input Set : **A:\60290-USA Sequence Listing.txt**
Output Set: **N:\CRF4\05232006\J534279.raw**

<110> APPLICANT: Wu, Shilan
Hayashi, Jon H.
Kinne, Lyle P.
Dierks, Peter M.
<120> TITLE OF INVENTION: Lepidoptera Voltage-Gated Calcium Channels
<130> FILE REFERENCE: FMC 60290
C--> **<140> CURRENT APPLICATION NUMBER: US/10/534,279**
C--> **<141> CURRENT FILING DATE: 2005-05-06**
<160> NUMBER OF SEQ ID NOS: 83
<170> SOFTWARE: PatentIn version 3.2
<210> SEQ ID NO: 1
<211> LENGTH: 5047
<212> TYPE: DNA
<213> ORGANISM: Heliothis virescens
<400> SEQUENCE: 1

(pg-6)

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96 aaaagaaaga agaggccaaa aaagaagatg aagatgaggt accagatgga ccaaaaccaa 2280
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104 actacttcga ttacgcgttc acgggcgtgt tcaccgtgga gatgctgctg aagatagtgg 2520
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172 acgctggact tctaatcctc gagagttgga gatctacaag gttcaagcag aatggtgttc 4560
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194 <211> LENGTH: 1662
195 <212> TYPE: PRT
196 <213> ORGANISM: Heliothis virescens
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208 Glu Trp Pro Pro Phe Glu Tyr Ala Val Leu Leu Thr Ile Ile Ala Asn
209 35 40 45
212 Cys Val Val Leu Ala Leu Glu Glu His Leu Pro Asn Gly Asp Lys Thr
213 50 55 60
216 Ile Leu Ala Gln Asn Leu Glu Lys Thr Glu Ala Tyr Phe Leu Gly Ile
217 65 70 75 80
220 Phe Cys Val Glu Ala Ser Leu Lys Ile Leu Ala Leu Gly Phe Val Leu
221 85 90 95
224 His Arg Gly Ser Tyr Leu Arg Asn Val Trp Asn Ile Met Asp Phe Phe
225 100 105 110
228 Val Val Val Thr Gly Ile Ile Thr Gln Leu Pro Ile Ala Pro Ala Asp
229 115 120 125
232 Val Asp Phe Arg Thr Leu Arg Ala Ile Arg Val Leu Arg Pro Leu Lys
233 130 135 140
236 Leu Val Ser Gly Val Pro Ser Leu Gln Val Val Leu Lys Ser Ile Ile
237 145 150 155 160
240 Lys Ala Met Ala Pro Leu Leu Gln Ile Gly Leu Leu Val Leu Phe Ala
241 165 170 175
244 Ile Val Ile Phe Ala Ile Ile Gly Leu Glu Phe Tyr Ser Gly Ala Leu
245 180 185 190
248 His Lys Thr Cys Tyr Asn Leu Glu Asp Ile Ser Glu Ile Val Asn Glu
249 195 200 205
252 Gly Asp Ser Ala Thr Pro Cys Asn Ala Asp Asn Val Ser Leu Ala Pro
253 210 215 220
256 Phe Gly Ala Asn Val Cys Asp Tyr Glu Lys Ser Thr Cys Leu Glu Lys
257 225 230 235 240
260 Trp Glu Gly Pro Asn Arg Gly Ile Thr Ser Phe Asp Asn Ile Gly Phe
261 245 250 255
264 Ala Met Leu Thr Val Phe Gln Cys Ile Thr Met Glu Gly Trp Thr Ala
265 260 265 270
268 Ile Leu Tyr Trp Thr Asn Asp Ala Leu Gly Ser Ala Phe Asn Trp Ile
269 275 280 285

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276 Val Leu Gly Val Leu Ser Gly Glu Phe Ala Lys Glu Arg Glu Lys Val
277 305                 310                 315                 320
280 Glu Asn Arg Gln Glu Phe Leu Lys Leu Arg Arg Gln Gln Gln Leu Glu
281                 325                 330                 335
284 Arg Glu Leu Asn Gly Tyr Val Glu Trp Ile Cys Lys Ala Glu Glu Val
285             340                 345                 350
288 Ile Leu Ala Glu Glu Arg Thr Thr Glu Glu Glu Lys Met His Ile Ile
289         355                 360                 365
292 Glu Ala Arg Arg Arg Ala Ala Ala Lys Lys Lys Leu Lys Asn Leu Gly
293     370                 375                 380
296 Lys Ser Lys Ser Thr Asp Thr Glu Glu Glu Glu Gln Asp Glu Asp Cys
297 385                 390                 395                 400
300 Gly Asp Asp Gly Phe Leu Lys Ser Lys Ala Arg Ser Ala Gly Arg Phe
301                 405                 410                 415
304 Ala Asp Phe Trp Arg Ala Glu Lys Arg Phe Arg Phe Trp Ile Arg His
305             420                 425                 430
308 Thr Val Lys Thr Gln Trp Phe Tyr Trp Phe Val Ile Val Leu Val Leu
309         435                 440                 445
312 Phe Asn Thr Ile Cys Val Ala Val Glu His Tyr Arg Gln Pro Lys Trp
313     450                 455                 460
316 Leu Thr Ser Phe Leu Tyr Tyr Ala Glu Phe Val Phe Leu Gly Leu Phe
317 465                 470                 475                 480
320 Met Met Glu Met Trp Val Lys Met Tyr Ala Leu Gly Pro Arg Ile Tyr
321                 485                 490                 495
324 Phe Glu Ser Ser Phe Asn Arg Phe Asp Cys Val Val Ile Ser Gly Ser
325             500                 505                 510
328 Ile Phe Glu Val Val Trp Ser Glu Val Lys Gly Gly Ser Phe Gly Leu
329         515                 520                 525
332 Ser Val Leu Arg Ala Leu Arg Leu Leu Arg Ile Phe Lys Val Thr Lys
333     530                 535                 540
336 Tyr Trp Ser Ser Leu Arg Asn Leu Val Ile Ser Leu Leu Asn Ser Met
337 545                 550                 555                 560
340 Arg Ser Ile Ile Ser Leu Leu Phe Leu Leu Phe Leu Phe Ile Leu Ile
341                 565                 570                 575
344 Phe Ala Leu Leu Gly Met Gln Leu Phe Gly Gly Gln Phe Asn Phe Glu
345             580                 585                 590
348 Asp Gly Thr Pro Pro Thr Asn Phe Asn Thr Phe Pro Ile Ala Leu Leu
349         595                 600                 605
352 Thr Val Phe Gln Ile Leu Thr Gly Glu Asp Trp Asn Glu Val Met Tyr
353     610                 615                 620
356 Asp Gly Ile Gln Ser Gln Gly Gly Ile Gln Arg Gly Met Ile Tyr Ser
357 625                 630                 635                 640
360 Leu Tyr Phe Val Ile Leu Val Leu Phe Gly Asn Tyr Thr Leu Leu Asn
361                 645                 650                 655
364 Val Phe Leu Ala Ile Ala Val Asp Asn Leu Ala Asn Ala Gln Glu Leu
365             660                 665                 670
368 Thr Ala Ala Glu Glu Glu Gln Val Glu Glu Asp Lys Glu Lys Gln Leu
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373      690                 695                 700
376 Pro Pro Gly Val Asp Leu Ser Pro Ser Ser Pro Thr Ser Arg Lys Asn
377 705                 710                 715                 720
380 Lys Lys Lys Glu Glu Ala Lys Lys Glu Asp Glu Asp Glu Val Pro Asp
381                 725                 730                 735
384 Gly Pro Lys Pro Met Leu Pro Tyr Ser Ser Met Phe Ile Leu Ser Pro
385             740                 745                 750
388 Thr Asn Pro Ile Arg Arg Gly Ala His Trp Val Val Asn Leu Arg Tyr
389          755                 760                 765
392 Phe Asp Phe Phe Ile Met Val Val Ile Cys Met Ser Ser Ala Ala Leu
393      770                 775                 780
396 Ala Ala Glu Asp Pro Val Val Glu Glu Ser Asp Arg Asn Lys Ile Leu
397 785                 790                 795                 800
400 Asn Tyr Phe Asp Tyr Ala Phe Thr Gly Val Phe Thr Val Glu Met Leu
401                 805                 810                 815
404 Leu Lys Ile Val Asp Leu Gly Ile Leu Phe His Pro Gly Ala Tyr Leu
405             820                 825                 830
408 Arg Asp Leu Trp Asn Ile Met Asp Ala Ala Val Val Ile Cys Ala Leu
409          835                 840                 845
412 Val Ser Phe Gly Phe Glu Ile Gly Gly Val Lys Lys Gly Ala Gly Gln
413      850                 855                 860
416 Asn Leu Ser Thr Ile Lys Ser Leu Arg Val Leu Arg Val Leu Arg Pro
417 865                 870                 875                 880
420 Leu Lys Thr Ile Lys Arg Val Pro Lys Leu Lys Ala Val Phe Asp Cys
421                 885                 890                 895
424 Val Val Asn Ser Leu Lys Asn Val Ile Asn Ile Leu Ile Val Tyr Ile
425             900                 905                 910
428 Leu Phe Gln Phe Ile Phe Ala Val Ile Ala Val Gln Leu Phe Asn Gly
429          915                 920                 925
432 Lys Phe Phe His Cys Asn Asp Ile Ser Lys Asn Thr Phe Glu Asp Cys
433      930                 935                 940
436 Gln Gly Ser Tyr Phe Val Tyr Glu Ser Asn Ser Leu Leu Pro Lys Val
437 945                 950                 955                 960
440 Asn Gln Arg Thr Trp Thr Thr Gln Ser Phe His Tyr Asp Asn Val Ala
441                 965                 970                 975
444 Val Ala Met Leu Thr Leu Phe Ala Val Gln Thr Gly Glu Gly Trp Pro
445             980                 985                 990
448 Gln Val Leu Gln Asn Ser Met Ala  Ala Thr Tyr Glu Asp  Arg Gly Pro
449          995                 1000                1005
452 Ile Gln  Asn Phe Arg Ile Glu  Met Ser Ile Phe Tyr  Ile Val Tyr
453      1010                1015                1020
456 Phe Val  Val Phe Pro Phe Phe  Phe Val Asn Ile Phe  Val Ala Leu
457      1025                1030                1035
460 Ile Ile  Ile Thr Phe Gln Glu  Gln Gly Glu Ala Glu  Leu Gln Asp
461      1040                1045                1050
464 Gly Glu  Ile Asp Lys Asn Gln  Lys Ser Cys Ile Asp  Phe Thr Ile
465      1055                1060                1065
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RAW SEQUENCE LISTING ERROR SUMMARY DATE: 05/23/2006
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Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:19; N Pos. 35
Seq#:21; N Pos. 1
Seq#:22; N Pos. 25,31
Seq#:49; N Pos. 18,24
Seq#:65; N Pos. 27
Seq#:67; N Pos. 20
Seq#:77; N Pos. 15,18

Invalid Line Length:
The rules require that a line not exceed 72 characters in length. This includes spaces.

Seq#:19; Line(s) 3492

Invalid <213> Response:
Use of "Artificial" only as "<213> Organism" response is incomplete, per 1.823(b) of New Sequence Rules. Valid response is Artificial Sequence.

Seq#:19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42
Seq#:43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66
Seq#:67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83

VERIFICATION SUMMARY DATE: 05/23/2006
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L:12 M:270 C: Current Application Number differs, Replaced Current Application No
L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:3492 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:0
L:3521 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:0
L:3544 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22 after pos.:0
L:3898 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:49 after pos.:0
L:4109 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:65 after pos.:0
L:4140 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:67 after pos.:0
L:4276 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:77 after pos.:0